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Public Health Information Sheet

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Desert Southwest
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510-817-1375
206-220-4270

Web Resources

NPS Public Health:
http://www.nps.gov/public_health/

CDC:
http://www.cdc.gov
Hotline: 888-246-2675

State and Local Health Departments:
http://www.cdc.gov/mmwr/international/relres.html

West Nile Virus – General Information

WNV is our most recent experience with emerging mosquito- borne disease. While new to the United States, it is not an emergent disease outside the Western Hemisphere. The virus was initially isolated from the blood of a woman in the West Nile District of Uganda in 1937, and subsequently found in humans, birds, and mosquitoes during studies conducted in Egypt throughout the 1950s. WNV is closely related to others in the genus Flavivirus and family Flaviviridae responsible for Japanese encephalitis, Murray Valley encephalitis and St. Louis encephalitis. Birds are the natural reservoir host and serve in the amplification of the virus. WNV is maintained in a mosquito- bird- mosquito epizootic transmission cycle, while humans (and other mammals) are incidental, dead- end hosts. WNV is now recognized as the most widespread of all the flaviviruses and has been isolated in more than 40 species of mosquitoes in at least 30 countries across Africa, Asia, Europe, and North America.

Since its discovery in 1999, WNV, an exotic species, has firmly established itself in the continental United States: 44 states and the District of Columbia report evidence of the virus. However, mosquito- borne diseases are not new to the United States. There are records of malaria and yellow fever epidemics as early as the 1690's, and the period between 1793 and 1806 is referred to as the "yellow fever era" in America. Through persistent public health intervention neither disease is presently endemic in the United States. Prior to WNV, the last major outbreak of a mosquito- borne disease in the United States occurred in the Midwest during 1975, with more than 2,000 documented cases of St. Louis encephalitis and 142 deaths.

West Nile virus (WNV) poses a threat to wildlife species as well. Although humans, horses, and other animals can become ill from WNV, birds are the natural host for the virus. High avian mortality, not observed in WNV outbreaks in the eastern hemisphere, is being observed in the United States and Canada. Highest mortality has been observed in birds in the corvid family (crows, jays, and related species). Some raptor species also appear highly susceptible to WNV. Thus far, WNV has been detected in over 160 bird and 15 mammal species, as well as captive alligators. Some reports estimate the number of birds that potentially died of WNV at well over a million. Monitoring bird populations and dead bird surveillance are important wildlife management activities that can be performed by NPS staff. Parks also offer excellent opportunities for use as outdoor laboratories for cooperative research on WNV.

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http://www.nps.gov/public_health/inter/info/factsheets/fs_wnv_gen.htm

Prevention and Control of West Nile Virus

Mosquito- borne diseases can be prevented in two major ways: personal protective measures to reduce contact with mosquitoes and public health measures to reduce the population of infected mosquitoes in the environment.

- Personal protection measures include:
- Staying indoors at dawn, dusk, and in the early evening.
- Wearing long- sleeved shirts and long pants whenever outdoors.
- Spraying clothing with insecticides containing permethrin
- Applying insect repellents containing DEET up to 35% concentration (N, N- diethyl- meta- toluamide). DEET in high concentrations (greater than 35%) provides no additional protection.
    - Insect repellents with 10% to 35% DEET will provide adequate protection under most conditions. The American Academy of Pediatrics recommends that repellents used on children contain no more than 10% DEET.
    - Repellents may be applied directly to the skin or to clothing, window screens, mesh insect nets, tents, or sleeping bags. Persons who are particularly concerned about potential toxicity from DEET may limit application of the repellent to their clothes.
    - Repellents containing DEET can damage plastics (such as watch crystals and eyeglasses frames), rayon, spandex, other synthetic fabrics, leather, and painted or varnished surfaces. DEET does not damage natural fibers, such as cotton or wool, and has no effect on nylon.

For detailed information mosquito repellents and insecticides, the following references are provided:

EPA Office of Pesticide Programs - (http://www.epa.gov/pesticides/factsheets/skeeters.htm)
National Pesticide Information Center - (http://npic.orst.edu/)

Public health prevention and control strategies for of West Nile virus are most effectively accomplished through integrated vector management programs. These programs include surveillance for West Nile virus activity in mosquito vectors, birds, horses, other animals, and humans, and implementation of appropriate mosquito control measures to reduce mosquito populations (e.g., elimination of larval habitats or spraying of insecticides to kill juvenile (larvae) and adult mosquitoes) when necessary.

Additionally, when virus activity is detected in an area, residents are alerted and advised to increase measures to reduce contact with mosquitoes. The following are practical risk reduction strategies that can be used around the home and the workplace:

- Remove all discarded tires on the property. Used tires are one of the primary breeding areas for mosquitoes.
- Dispose of tin cans, plastic containers, ceramic pots, or similar water- holding containers.
- Drill holes in the bottom of recycling containers left outdoors.
- Make sure roof gutters drain properly, and clean clogged gutters in the spring and fall. Roof gutters can produce millions of mosquitoes each season.
- Turn over plastic wading pools and wheelbarrows when not in use.
- Change water in birdbaths and pet bowls.
- Clean vegetation and debris from edges of ponds.
- Clean and chlorinate swimming pools, outdoor saunas and hot tubs.
- Aerate or add fish to ornamental ponds. (Remember to drain water from pool covers and tarps.)
- Use landscaping to eliminate standing water that collects on your property. Mosquitoes may breed in any puddle that lasts for more than four days.

Additional Resources:

Frequently Asked Questions - (http://www.nps.gov_public_health/inter/faqs/faq_ill.htm)

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